Amendments to the Claims

1.   1. (currently amended) A method for processing ~~RF~~ radio frequency (RF)
2.   signals in a multi-antenna systems, comprising:
3.   generating L_t input data streams in a transmitter, where L_t is an
4.   integer;
5.   modulating the L_t ~~weighted~~ input data streams to RF signals;
6.   switching the RF signals to $t \geq L_t$ RF branches, where t is an integer;
7.   applying a phase-shift transformation to the RF signals by a $t \times t$
8.   matrix multiplication operator Φ_1, whose output are t RF signals;
9.   transmitting the t RF signals over a channel by t transmit antennas;
10.   receiving the transmitted signals by r antennas in a receiver, where r
11.   is an integer;
12.   applying a phase-shift transformation to the r RF signals by a $r \times r$
13.   matrix multiplication operator Φ_2;
14.   selecting L_r branches from the r streams, where L_r is an integer;
15.   demodulated the L_r signal streams; and
16.   processing in baseband to recover output data streams corresponding
17.   to the input data streams.

1.   2. (original) The method of claim 1, in which each of the L_t input data
2.   stream has a weight, and further comprising:
3.   summing the L_r weighted data streams before the demodulating and
4.   decoding.

1   3. (original) The method of claim 1, in which the L_t input data streams are

2   generated by a space-time block coder.

1   4. (original) The method of claim 1, in which the L_t input data streams are

2   generated by a space-time trellis coder.

1   5. (original) The method of claim 1, in which the input data streams are

2   space-time layered structures.

1   6. (original) The method of claim 1, in which $t = L_t$, and the matrix $\mathbf{\Phi}_1$ is an

2   identity matrix.

1   7. (original) The method of claim 1, in which $r = L_r$, and the matrix $\mathbf{\Phi}_2$ is an

2   identity matrix.

1   8. (original) The method of claim 1, in which entries of the matrix $\mathbf{\Phi}_1$ have

2   constant modulus phase-only terms.

1   9. (original) The method of claim 1, in which entries of the matrix $\mathbf{\Phi}_2$ have

2   constant modulus phase-only terms.

1   10. (original) The method of claim 1, in which entries of the matrices $\mathbf{\Phi}_1$ and

2    $\mathbf{\Phi}_2$ have constant modulus phase-only terms.

1   11. (currently amended) The method of ~~claims 8~~ claim 8, in which the

2   phase-only terms adapt to an estimate of an instantaneous channel state.

1   12. (original) The method of claim 8, in which the phase-only terms adapt to

2   an estimate of an average channel state.

1   13. (original) The method of claim 1, in which the matrix Φ_1 is a fast Fourier

2   transform matrix.

1   14. (original) The method of claim 1, in which the matrix Φ_2 is a fast Fourier

2   transform matrix.

1   15. (original) The method of claim 1, in which the matrices Φ_1 and Φ_2 are

2   fast Fourier transform matrices.